DOCUMENT RESUME

ED 429 850 SO 029 095

AUTHOR Brown, Elizabeth A.
TITLE Effectively Teaching Critical Thinking Skills to High School Students.
PUB DATE 1997-00-00
NOTE 18p.
PUB TYPE Guides - Classroom - Teacher (052)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Class Activities; *Critical Thinking; *Debate; *High School Students; High Schools; Instructional Effectiveness; *Problem Solving; Student Development; *Thinking Skills

ABSTRACT

Today's highly technical information society is marked by constant change. To be competent, functional, and prepared to deal with the future, students need to be able to analyze, question, and evaluate information critically. Therefore, the educational community has renewed interest in teaching critical thinking. Unfortunately, educational practices often concentrate on rote knowledge of facts while neglecting problem solving skills. This paper addresses the effectiveness of classroom debate as a tool to teach problem solving skills. The strategies given enable high school teachers to prepare their students for classroom debate. Contains 18 references. (Author/BT)

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ED 429 850

Effectively Teaching Critical Thinking Skills to High School Students

Elizabeth A. Brown RN, BSN, MPA, CSN

Seton Hall University

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Elizabeth A. Brown

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Abstract

Our highly technical, information society is marked by constant change. In order to be competent, functional and prepared to deal with the future; people must be able to analyze, question and evaluate information critically. Therefore, the educational community is having renewed interest in teaching critical thinking. Unfortunately, educational practices often concentrate on rote knowledge of facts while neglecting problem solving skills. This paper addresses the ways in which classroom debate can be an effective tool to achieve this end.

Effectively Teaching Critical Thinking Skills to High School Students

Critical thinking is reflective reasoning related to decisions about what to believe, value and how to act. It is a component of problem solving that involves exploring situations, analyzing issues, viewing different perspectives and discussing and clarifying ideas (Seton Hall University, Department of Undergraduate Nursing, 1996). From this standpoint, debate becomes an applied definition of critical thinking (Worthen & Pack, 1992). The textbooks used to teach argumentation and debate in high school directly relate the goal of teaching critical thinking as their number one priority and basic premise (Thompson, 1971; Wood, 1986). Therefore, classroom debate will be utilized to teach high school students critical thinking skills.

In organizing an approach, one must first evaluate not only the different theories of learning, but also the cognitive abilities of the adolescent. To this end, a brief overview of Piaget's cognitive development will be given. The strengths and limitations of the traditional, cognitive and humanistic theories in terms of critical thinking skills will also be outlined. Lastly, the proposed teaching/learning strategy is discussed, which utilizes parts of the cognitive and humanistic models assimilated with problem based learning in a constructivist framework.

As we know, adolescents want to be liked, accepted and loved by their peers and crave the reciprocal reinforcement of the peer group (Wieczorek & Natapoff, 1981). Because of this importance, the group process was chosen.

In addition, adolescents are approaching Piaget's formal operations stage. This means they are able to reason using hypotheses and propositions. These propositions are experimentally formulated in order to consider all possible consequences and are then checked by comparison to the facts. This is therefore, an important stage of development because it is associated with logic and facts and marks the departure from concrete thinking (Wieczorek & Natapoff, 1981). However, not all people reach the formal

operations stage, as some youngsters' abilities seem to arrest at the concrete level. Although the cause is unknown, there are concerns about the environmental demands on this development. If an adolescent is not encouraged or does not feel there is a need for more advanced logical forms, then the achievement at the concrete level of operations is deemed sufficient. (Wieczorek & Natapoff) This is exactly why the debate process is utilized. Critical thinking can not take place if the person is operating at the concrete level!

Traditional views of education reflect a factory model of production in American society. This behavioral approach has dominated education for the past 50 years (Feden, 1994). Its principles operate under the assumption that the learner is passive and learning occurs through the external events of experience and training. This gives rise to a system of powerlessness of the student, who has little to say about what happens to him/her all day. The teacher takes the role of dictator and unilaterally decides what is to be studied and how it will be evaluated. Goals are based on tradition and on teachers values and priorities; not on how children acquire knowledge and moral values (Kamii, Clark & Dominick, 1994). Moreover, when the instructor marks a question wrong, it gives the impression that only he/she knows the correct answer. It discourages critical thinking because it makes children stop thinking and debating, as the teacher takes responsibility for the correct answer (Kamii, et al.). Thus, students are not invited to become active participants in their own education and schooling is about doing things to them, not with them (Kohn, 1993). Furthermore, the traditional school operates under a system of rewards and punishments which promotes rote memorization techniques as opposed to higher level thinking strategies.

We cannot expect children to accept ready made values and truths all the way through school and then suddenly expect them to make choices in adulthood. Likewise, we cannot expect them to be manipulated with rewards and punishments and then hope they become autonomous critical thinkers (Kohn, 1993). Critical thinking cannot be successfully

promoted in the absence of choice. Scholastic choice leads to learning and not just remembering (Kohn).

Coherent goals for education need to be based on the scientific theory about how human beings acquire knowledge and moral values. Cognitive theorists such as Piaget believe, "Education requires a deeper, longer range perspective that is different from the mind set necessary to produce quality cars" (Kamii et al.,1994, p.13). Herein lies the foundation for critical thinking. Thus, the cognitive theory of learning views learning as being dependent on not only how teachers present the information, but on how the students process it. It tries to understand how students construct, organize and make sense out of their knowledge. Cognitive theorists believe that intellectual pursuits should enable students to make sense out of their world, as this will naturally foster intrinsic motivation. Students learn best when they are personally curious, deeply involved or in a social situation where they have to defend a position (Kamii et al.).

Critical thinking proficiency will transform classrooms and empower pupils who will compose the next generation of American citizenry (Feden, 1994). We can no longer reward rote memorization. Rather we must stress true content understanding, intrinsically motivate students and stress mastery goal orientation. This is learning for self improvement irrespective of the performance of others. Students who adopt mastery goals are more likely to have a positive attitude toward the task, even outside the classroom. They tend to use critical thinking skills by monitoring their own comprehension, using organizational cognitive strategies and by relating newly learned material with the previously learned (Dembo, 1994). Pupils who connect new knowledge to prior knowledge in the long term memory are more likely to retain the new knowledge in an organized fashion and retrieve it more easily (Feden).

Moreover, the cognitive teachers role is that of facilitator. He/she help students plan appropriate learning strategies, monitor and regulate their own understanding and make autonomous decisions for future learning. It is a self directed learning experience where

the students use their prior knowledge, evaluate alternatives, develop a plan of attack and consider contingency plans. Therefore, the students are encouraged to express their ideas about what they tried to do, how they tried to do it, what they did when they faced obstacles and what they should do if faced with similar problems in the future. Learning does not happen to students, it happens by them (Dembo, 1994).

As one can see, the cognitive theorists strive to make students self regulating and autonomous in the intellectual as well as the moral sense. According to Piaget's theory, autonomy is the ability to think for oneself and determine what is right and wrong, taking all factors into account and independent of rewards or punishments (Kamii et al., 1994). These are precisely the skills needed for critical thinking. Children who are discouraged from thinking critically and autonomously will construct less knowledge than those who are confident and do their own thinking (Kamii et al.).

In addition, children acquire moral convictions not by internalizing them from the environment, as in the traditional view, but from internally constructing them through the exchange of ideas with people who are close and important to them. This exchange of viewpoints fosters autonomy by considering other peoples perspectives. Consequently, when other relevant factors are taken into account such as peoples rights and feelings, they will construct from within a rule of treating others as they wish to be treated (Kamii et al., 1994).

An added advantage to this approach is in conflict management. An effective conflict management program tries to create a world in which people can cooperate and collaborate (Stanford, 1995). In the case of a conflict between two children in class, the traditional teacher tells them to stop it and pay attention. The result is often that the conflict continues behind the teachers back. A teacher whose aim is autonomy, will tell these students to step away from the group and negotiate the situation. If negotiation or exchange of viewpoints is encouraged from an early age, children become surprisingly good at conflict resolution (Kamii et al., 1994).

The limitation during this exchange of ideas, however, is that students may say what is socially acceptable to their peers as opposed to telling what they really feel. Furthermore, it may be presumptuous to believe that if students take their peers rights and feelings into account they will treat others as they wish to be treated themselves. Further research needs to explore this theory of human behavior.

Another limitation of the cognitive model is that it uses learning objectives. This in itself, takes away from total self directed knowledge and the benefits of autonomy. Spontaneous, animated conversations about topics of interest to students are snuffed out in order for the class to return to the prescribed lesson plan.

In addition to the cognitive theory, another approach focuses on the humanistic perspective. The humanistic theory recognizes that students are guided by personal meanings and feelings they attach to the learning experience. Humans have the natural desire and eagerness to learn and behavior is determined upon how you perceive yourself and the world around you. Therefore, humanistic educators are responsive to the affective needs of the student. It makes education more human, personal and student centered; as opposed to the traditional teacher centered learning.

Humanists emphasize self focus which in turn improves self esteem. They believe that self esteem is the key to achievement and critical for intellectual development. If you improve self esteem, behavior and achievement improves and the student is better adjusted, happier and satisfied (McMillan, Singh & Simonetta, 1994).

The humanistic dilemma of teaching is not how to present the subject matter, but how to help the students derive personal meaning from it. Significant learning takes place when students perceive it relevant to their needs and purposes. Students need the freedom to satisfy their curiosity in an environment free from threat, where mistakes can be made without criticism and ridicule. They need to pursue interests unabated and discover for themselves what is meaningful and important. It is this personal meaning that will propel

the student onward to higher thought processes and eventually into critical thinking (Dembo, 1994). Things are quickly forgotten if they have little meaning to the self.

This self guided affective approach is in sharp contrast to the traditional classrooms where teachers decide what to learn. It also parallels the cognitive theory in that students need to be self regulated and self directed. Lastly, it reflects the information processing system. This is the cognitive structure through which information flows during learning. New information is attached to old in the long term memory when the student decides what is meaningful and purposeful (Dembo, 1994). True learning, understanding and critical thinking can then occur.

Furthermore, humanist teachers need to understand what the process of learning means to the student. They need the ability to view the world through the students eyes in order to be effective. This is however, a potential source of bias as inaccurate assumptions and observations can lead to poor results.

There are several other inherent limitations in the humanist school of thought. It makes the assumption that we will be content and happy if we concentrate on ourselves and what is best for us. Thus, coping with failure is difficult and there is an increase in depression, hopelessness and other personal difficulties (McMillan et al., 1994). In addition, encouragement of self introspection may distort a normal, healthy perspective about oneself into self importance, self gratification and selfishness. This draws the child away from social realities to which he/she must adapt for proper character development. Those who are taught to place themselves first will not respect others. Negative consequences of de-emphasizing other people, the community and also larger society include vandalism, violence, racial tensions, divorce and drug abuse (McMillan et al.). Other criticism points out that there is an absence of a clear direct purpose, as the goals are vague. There is also weak support for the ability to bring about changes in self esteem and attitude and there is a lack of thoroughness in planning and theoretical organization. Inadequate measurement and evaluation of affective parameters is inherent. Moreover,

since there is an inconsistency among the components of affective programs, students develop their own values and beliefs. The controversy arises when these values conflict with institutional and community values (Dembo, 1994).

Likewise, a limitation in both the cognitive and humanistic theories is that of increasing class size and poor social conditions. Students will not learn if they come to school hungry, cold, tired and homeless. Large class size will inhibit learning because of environmental and logistical concerns. It is unlikely a student will learn if he/she is crammed into the halls or closets of the school. In smaller classes, teachers morale and attitude toward students are more positive and satisfaction with their own teaching is greater. Correspondingly, students in a smaller class have more positive attitudes about their teacher, school and themselves (Dembo, 1994).

When speaking about self directed learning, one must wonder if this realistically fits into our current societal and educational structure. Take for instance, the Science Skills Center in New York. Despite the various theories of learning and educational reform movements, Michael Johnson is committed to preparing his students for the world that already exists. He teaches for the test because he feels these are the skills students need to get past the gates into the middle class (Mosle, 1996). Testing in our culture is related to indexes of intellectual and academic performances (Dembo, 1994). Without these skills, students cannot succeed in American society, no matter how smart they are. One certainly must consider this point of view. The conflict arises from the push to produce critical thinkers on the one hand and competitive high ranking students who have to memorize words and their definitions to pass tests on the other.

Nevertheless, learning to think critically can be developed but the key is to teach beyond the typical rote knowledge level. The curriculum goals should facilitate thought process. Instructors can teach students to evaluate and reflect by emphasizing such skills (Worthen & Pack,1992).

Improvement in critical thinking comes first by teaching students the skills of reasoning and then engaging them in activities that specifically use these skills. Since human beings have an intrinsic desire to make sense of their world and learn best when they are personally curious, deeply involved or in a social situation that requires them to defend a position, applying classroom debate is a strong step towards this goal. Furthermore, if the students change sides in the middle of the debate, this especially motivates them to understand both sides of an issue (Kamii et al., 1994). Having to coordinate subjective perspectives in a debate makes learning more alive and unforgettable than does reviewing objectives in a dull textbook or listening to a lecture. Studies on attention span indicate that after about 15 to 20 minutes, a lecture looses its effectiveness for most learners (Feden, 1994).

Consequently, as already discussed, my teaching strategy combines parts of the cognitive and humanistic theories assimilated with problem based learning in a constructivist framework. Problem based learning replaces the traditional lecture based approach and involves presenting a problem or scenario to students. The students then discuss the problem, generate hypotheses and identify learning issues. It is advocated as an effective approach to focus students on critical and creative thinking, metacognition and authentic problem solving (Savery & Duffy, 1995). Metacognition refers to ones ability to plan, monitor and regulate one's own thinking (Dembo, 1994). It promotes effective learning and stresses higher level critical thinking skills.

Constructivism is a philosophical view on how we come to understand or know and is characterized in terms of three propositions. First, understanding is an individual construction and it relates to our environmental interactions. Secondly, cognitive puzzlement is the stimulus for learning and determines the organization and nature of what is learned. Lastly, the constructivist believes that knowledge evolves through social negotiation and through the evaluation of the viability of individual understandings

(Savery & Duffy, 1995). As one can see, classroom debate is an effective milieu in such a framework.

I therefore, first determine what skills, knowledge and dispositions are essential to the students if they are to sustain themselves in a democratic society (Lewis, Schaps & Watson, 1995). To this end, the unit chosen is on Constitutional Rights and designed to promote student interest and involvement. Each section starts out with an assigned reading, for instance, on the re-examination of free speech by the Court when it made it legal to burn the United States flag. Other similar controversial scenarios will be analyzed throughout the unit, as cognitive puzzlement is a stimulus for learning. The students learn and appreciate content and skills in the context of the types of problems encountered in the real world (McConney, 1994).

At this point, problem based learning is utilized. The students are presented with a problem, they discuss it, generate hypotheses based on existing knowledge in the long term memory, identify learning issues, test hypotheses and apply conclusions (Savery & Duffy, 1995). Each student verbally reflects on the problem and assumes responsibility for the learning issues identified. These could be topics of any sort deemed of potential relevance to the problem and which the students feel they do not know as well as they should. There are no pre-specified objectives presented to the students and they engage in self directed learning.

In addition, the problem based learning model is based in a constructivist framework. The contructivist propositions outline a set of instructional principles than can guide the practice of teaching and the design of the learning environment (Savery & Duffy, 1995). All learning is anchored to a larger task, that of learning the Constitutional Rights. For this reason, an advanced organizer is used. Presented before the lesson in a higher level of abstraction, it helps the student activate prior knowledge and serves as a anchor for future learning (Feden, 1994). Problems are then solicited from the learner and used as the stimulus for learning activities. The students thereby take ownership of the project. The,

task is authentic and mirrors the complex demands in which we are preparing the learner. The learning environment is properly supported and challenged and the goal is for students to develop strategies to manipulate and process information (Savery & Duffy).

The goals of the unit are specific. Goals that set specific performance standards are more likely to increase motivation than are general goals; such as, "Do your best." This leads the learner into determining the amount of effort required for success and effects feelings of satisfaction when goals are attained (Dembo, 1994). Easier goals are given in the beginning of the unit so the students experience success and develop confidence in their ability for further learning. All of this lends itself to intrinsic motivation and mastery goal orientation as described earlier.

Likewise, the assignments are broken down into manageable components. Conferences will be set to discuss individual classroom goals and to establish contracts for learning. This will help students take more responsibility for their learning and develop greater self efficacy. The higher the efficacy, the more likely the student will apply appropriate learning strategies; that is, to critically think and not just memorize (Dembo, 1994).

In addition, belief in the ability to achieve is greater in the classrooms of autonomy oriented teachers. Students who perceive their classrooms as more autonomous are more intrinsically motivated, have a higher self esteem and have higher cognitive competence (Dembo, 1994). Also, when students are given opportunity to participate in decisions about schoolwork they score higher on standardized tests and are more likely to continue working on even uninteresting tasks (Kohn, 1993). Since the evidence suggests that choice works, there is plenty of it!

In preparation for the debate, opportunities for problem solving and critical thinking are given. No answer is labeled incorrect as this builds self confidence (Drake, 1993). Open ended statements and questioning techniques that personally involve the students are given and interactive discussions are used. The students can brainstorm and generate

ideas and the teacher then organizes these ideas into a rational and coherent pattern, adding some ideas if needed.

The teacher can also facilitate the discussion, as in the cognitive model, by complicating the circumstances to generate an in depth analysis (Dembo, 1994). Facilitation is not knowledge driven, rather it focuses on metacognition (Savery & Duffy, 1995). Therefore, the facilitator models critical thinking by asking questions that probe students knowledge deeply and challenges their thinking; such as, Why?, What is your belief?, How did you arrive at your position?, How do you know that's true?, Is there anything else? and Do you know what that means? Both the level of understanding, its relevance and completeness is challenged. After a while, the students will do this themselves (Dembo).

The teaching strategy is based in cooperative learning not competitive. The learners are actively involved and assist each other in constructing knowledge. The instructor has power with students not power over them. Mutual respect is emphasized and the group confer about decisions, face up to conflict and shape compromise.

The group process is chosen not only because knowledge evolves through social negotiations but also because of the importance of the adolescent peer group. Collaborative groups test our comprehension and examine the understanding of others as a mechanism for enriching our own understanding of particular issues. Other people are the greatest source of alternative views to challenge our current views and hence serve as the source of cognitive puzzlement (Savery & Duffy, 1995).

Different roles are then assigned to groups of students who participate in an in class debate. The supporters defend the authors position. The critics find flaws with the position. The observers decide who was more convincing and the discussion leaders manage the debate (Feden, 1994). The case is then presented and the issues refined to outline dilemmas that need to be resolved.

Classroom debate can be an effective method to achieve critical thinking because it helps the student move from passive acceptance to critical thinking in order to defend a point of view (Worthen & Pack, 1992). Critically looking at two sides of an issue creates a greater tolerance and awareness to controversial issues. This forces the participants to synthesize arguments and analyze the logical connection they have to the evidence presented. As the debater critically views the facts, language, hypotheses, beliefs and assumptions of arguments systematically, many goals of critical thinking are achieved (Worthen & Pack).

Evaluation or testing ideas are socially negotiated and based on what the students identified as learning issues. Support and reflection is given on both the content learned as well as the learning process.

Advocates of critical thinking are concerned that multiple choice testing cannot serve well the goal of evaluation. They believe such thinking can follow multiple paths to multiple solutions and often there is no consensus on either a correct path or a correct solution. However on the other hand, multiple choice tests seem an appropriate format for testing certain aspects of critical thinking such as using the many principles for appraising the credibility of information (Norris, 1992).

So, in addition to the content based multiple choice test, verbal reports of thinking is a plausible way to collect the direct evidence desired; that is, the presence of critical thought process. These verbal reports should form an analysis of reasons in an attempt to gain information on the mental processing involved in choosing answers. Bloom and Broder (1950) were among the earliest users of verbal reports of thinking in test development. They asked a sample of college students to think aloud while they worked through questions on a problem solving test. The verbal reports yielded "relatively consistent and meaningful data from the majority of subjects" (p.90) and helped to support inferences from the students problem solutions to the thinking that led to the solutions.

In summation, teaching critical thinking is by no means unique. Educational reform groups have been advocating it for years. Yet, the approach taken by equating critical thinking directly to argumentation and debate gives a more concrete method for students to experience curriculum. Perhaps initiating debate within high school curriculum is the first step in achieving this end.

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